

REMARKS

Applicants respectfully request entry of the foregoing and reconsideration of the subject matter identified in caption, as amended, pursuant to and consistent with 37 C.F.R. §1.114, and in light of the remarks which follow.

Claims 23-25, 27-34, 36-40, 42, and 46-48 are pending in the application, claims 22, 41, 43 and 44 having been canceled above.

By the above amendments, claims 46-48 have been amended to further recite "devolatilizing a silicone oil obtained from the hydrosilylation reaction." Support for this amendment can be found at least at page 5, lines 1-7 and the Examples in the specification. Claims 23-24, 29-34, 39 and 42 have been amended to depend from claim 46, instead of canceled claim 22. Claims 42 and 48 have been further amended to correct a spelling error. Finally, claims 46 and 48 are further amended to emphasize that the processes include using a heterogeneous catalytic composition to reduce reactions that can form a gum and/or resin during devolatilization.

Turning now to the Official Action, claims 22, 43 and 48 stand objected to for including a spelling error. Claims 22 and 43 have been canceled. With respect to the objection to claim 48, Applicants have amended claim 48 to address the spelling error therein.

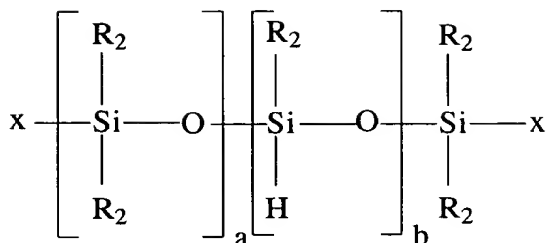
Accordingly, Applicants respectfully request reconsideration and withdrawal of the objection.

Claims 22, 24, 25, 27-30, 32, 41, 43, 44 and 46-48 stand rejected under 35 U.S.C. §102(b) as being anticipated by, or in the alternative, under 35 U.S.C. §103(a) as being

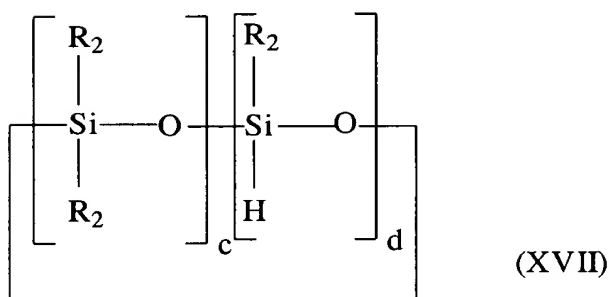
obvious over *Jachmann* et al (U.S. Patent No. 5,187,251). Additionally, claims 34 and 36-38 stand rejected under 35 U.S.C. §102(b) as being anticipated by *Jachmann* and claims 23, 30, 31, 33, 39, 40 and 42 stand rejected under 35 U.S.C. §103(a) as having been obvious over *Jachmann*. For at least the reasons that follow, withdrawal of these rejections is in order.

Independent claim 46, as amended above, defines a process for the preparation of a nonturbid, functionalized silicone oil of stable viscosity, the process comprising: hydrosilylating polyorganohydrosiloxane with synthons wherein:

- (1) the synthons hydrosilylated with the polyorganohydrosiloxane are different or identical, comprising at least one hydrocarbon-comprising ring in which is included at least one oxygen atom,
- (2) said hydrosilylation reaction is carried out in the presence of a heterogeneous catalytic composition to reduce reactions that can form a gum and/or resin during devolatilization, the heterogeneous catalytic composition comprising a metal selected from the group consisting of cobalt, rhodium, ruthenium, platinum and nickel deposited on an inert support, said inert support selected from the group consisting of carbon black, charcoal, alumina, silicate and barium oxide, and
- (3) the polyorganohydrosiloxane is linear or cyclic and has the mean formulae:



and/or



in which:

- the symbols R_2 are identical or different and correspond to a monovalent hydrocarbon-comprising radical chosen from the phenyl radical and linear or branched alkyl radicals having from 1 to 6 carbon atoms;
- the symbols x are identical or different and correspond to a monovalent radical chosen from R_2 , a hydrogen atom, a methoxy radical and an ethoxy radical;
- a and b are integers or fractions, such that:
 - $0 < a \leq 200$,
 - $0 \leq b < 200$,

- and at least one of the two x groups corresponds to the hydrogen radical if $b = 0$,

- $5 < a + b \leq 200$;

■ c and d are integers or fractions, such that:

- $0 < c < 5$,

- $1 < d < 10$,

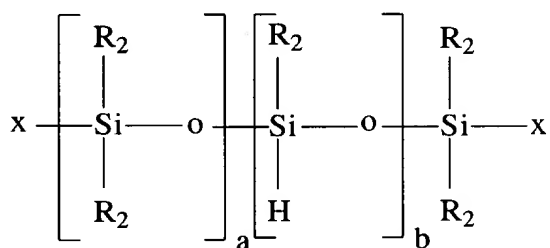
- $3 < a + b < 10$; and

(4) devolatilizing a silicone oil obtained from the hydrosilylation reaction. (Emphasis added.)

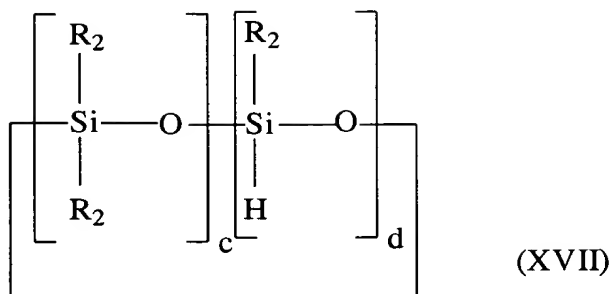
Independent claim 47 defines a process for the preparation of functionalized silicone oils which are stable and nonturbid, the process comprising providing a heterogeneous catalytic composition to reduce reactions that can form a gum and/or resin during devolatilization the heterogeneous catalytic composition comprising a metal selected from the group consisting of cobalt, rhodium, ruthenium, platinum and nickel deposited on an inert support, said inert support being selected from the group consisting of carbon black, charcoal, alumina, silicate and barium oxide; hydrosilylating a polyorganohydrosiloxane with synthons in the presence of the catalytic composition wherein the synthons are different or identical and comprise at least one hydrocarbon-comprising ring in which is included at least one oxygen atom; and devolatilizing a silicone oil obtained from the hydrosilylation reaction. (Emphasis added.)

Independent claim 48 defines a process for the preparation of a nonturbid, functionalized silicone oil of stable viscosity, the process comprising: hydrosilylating polyorganohydrosiloxane with synthons wherein:

- (1) the synthons hydrosilylated with the polyorganohydrosiloxane are different or identical, comprising at least one hydrocarbon-comprising ring in which is included at least one oxygen atom,
- (2) said hydrosilylation reaction is carried out in the presence of a heterogeneous catalytic composition to reduce reactions that can form a gum and/or resin during devolatilization, the heterogeneous catalytic composition comprising a metal selected from the group consisting of cobalt, rhodium, ruthenium, platinum and nickel deposited on an inert support, said inert support selected from the group consisting of carbon black, charcoal, alumina, silicate and barium oxide, and
- (3) the polyorganohydrosiloxane is linear or cyclic and has the mean formulae:



(XVI)



and/or

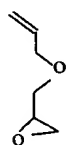
in which:

- the symbols R_2 are identical or different and correspond to a monovalent hydrocarbon-comprising radical chosen from the phenyl radical and linear or branched alkyl radicals having from 1 to 6 carbon atoms;
- the symbols x are identical or different and correspond to a monovalent radical chosen from R_2 , a hydrogen atom, a methoxy radical and an ethoxy radical;
- a and b are integers or fractions, such that:
 - $0 < a \leq 200$,
 - $0 \leq b < 200$,
 - and at least one of the two x groups corresponds to the hydrogen radical if $b = 0$,
 - $5 < a + b \leq 200$;
- c and d are integers or fractions, such that:
 - $0 < c < 5$,

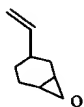
- $1 < d < 10$,

- $3 < a + b < 10$

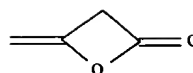
wherein the synthon has the formula:



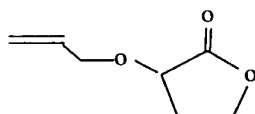
(VII),



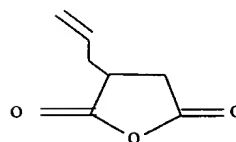
(IX),



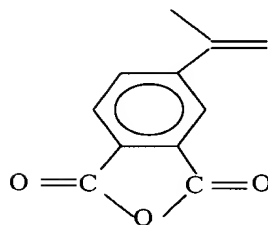
(X),



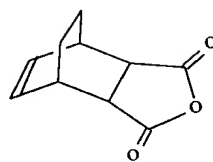
(XI),



(XII),

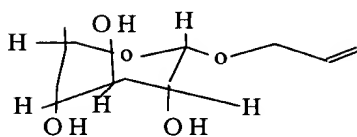


(XIII),



(XIV)

or



(XV); and

(4) devolatilizing a silicone oil obtained from the hydrosilylation reaction. (Emphasis added.)

Jachmann relates to curable polyorganosiloxanes having epoxy groups. The invention of *Jachmann* also relates to a method for synthesizing these curable polyorganohydrosiloxanes having epoxy groups and the use thereof as curable coating

materials with adhesive properties, as casting compositions and as coating materials for glass fibers. (See *Jachmann* at column 1, lines 9-15.)

It is well established that in order to demonstrate anticipation under 35 U.S.C. §102(b), each element of the claim in issue must be found, either expressly described or under principles of inherency, in a single prior art reference. See Kalman v. Kimberly-Clark Corp., 218 USPQ 789 (Fed. Cir. 1983). That is not the case here.

Jachmann does not expressly or inherently describe each element of claims 46, 47 and 48. For example, each of these claims, as amended above, defines a reaction that includes devolatilizing a silicone oil obtained from a hydrosilylation reaction, which is conducted in the presence of a heterogeneous catalytic composition to reduce reactions that can form a gum and/or resin during the devolatilization.

The specification at page 3, line 21 to page 4, line 8, explains: "synthons comprising a ring in which is included an oxygen atom (epoxide, and the like) . . . during the devolatilization stage" have "a tendency to open and cause uncontrolled polymerization and crosslinking reactions (formation of gum and/or resin) of the functionalized oils which are initiated by the presence of traces of the usual catalytic compositions such as homogeneous compositions" Clearly, this problem limits the effectiveness of processes for making functionalized silicone oils and is specific to processes like those defined in claims 46-48 because it is related to the use of synthons having a ring that includes an oxygen atom. Thus, this problem does not affect all hydrosilylation reactions. *Jachmann*, however, is completely silent about this problem and does not expressly or inherently describe using a heterogeneous catalytic composition to reduce reactions that can

form a gum and/or resin during devolatilization or devolatilizing a silicone oil, as defined in independent claims 46-48. Thus, Applicants submit that the processes of claims 46-48 are not anticipated by *Jachmann*.

With respect to the 103 rejection over *Jachmann*, Applicants note that to establish a *prima facie* case of obviousness, the prior art references (or references when combined) must teach or suggest all of the claim elements. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). In addition, "all words in a claim must be considered in judging the patentability of that claim against the prior art." *In re Wilson*, 424 F.2d 1382, 1385; 165 USPQ 494, 496 (CCPA 1970). See M.P.E.P. § 2143.03.

As explained above, *Jachmann* does not teach or suggest all of the claim elements. Specifically, *Jachmann* fails to disclose or suggest a process for the preparation of a non-turbid functionalized silicone oil of stable viscosity comprising hydrosilylating polyorganohydrosiloxane with synthons in the presence of a heterogeneous catalytic composition to reduce reactions that can form a gum and/or resin during devolatilization, wherein the process includes a step of devolatilizing a silicone oil obtained from the hydrosilylation reaction, as defined in independent claims 46, 47 and 48. Accordingly, because *Jachmann* fails to teach or suggest these claim elements, *Jachmann* fails to establish a *prima facie* case of obviousness.

Additionally, the §103 rejection over *Jachmann* fails to reflect a proper consideration of "all words" in the claim. In particular, because *Jachmann* does not disclose or suggest a process that includes conducting a hydrosilylation reaction in the presence of a catalytic composition to reduce reactions that can form a gum and/or resin

during devolatilization and which includes devolatilizing a silicone oil obtained from the hydrosilylation reaction, Applicants submit that the rejection does not give full consideration to all claim limitations, i.e., patentable weight must be given to "to reduce reactions that can form a gum and/or resin during devolatilization" and "devolatilizing a silicone oil obtained from the hydrosilylation reaction" in claims 46, 47 and 48 in judging the patentability of these claims over *Jachmann*.

Additionally, the rejection under §103 over *Jachmann* fails to consider the invention as a whole. In particular, *Jachmann* does not disclose a process that includes devolatilizing a silicone oil obtained from a hydrosilylation reaction wherein a heterogeneous catalytic composition is used to reduce gum/resin-forming reactions during devolatilization. Because *Jachmann* fails to even consider the problem of reducing reactions that can form a gum and/or resin during devolatilization, Applicants submit that the processes of claims 46, 47 and 48 would not have been obvious over *Jachmann*.

That is, while the processes of claims 46 to 48 provide surprising and unexpected results including stable viscosity, non-toxicity, (i.e., a limited amount of metal in the resulting oil), substantially zero coloring and non-turbidity, *Jachmann* fails to even suggest a process that includes using a heterogeneous catalytic composition to reduce reactions that can form a gum and/or resin during devolatilization and devolatilizing a resulting functionalized silicone oil, as claimed.

Because *Jachmann* is entirely unrelated to reducing reactions that can form a gum and/or resin during devolatilization and because *Jachmann* does not disclose a process that includes devolatilizing a silicone oil as defined in claims 46, 47 and 48, Applicants

respectfully submit that the claimed processes would not have been obvious over *Jachmann*.

The Official Action also fails to establish that *Jachmann* provides a reasonable expectation of success. In particular, M.P.E.P. § 2143.02 states that a reasonable expectation of success is required to establish a *prima facie* case of obviousness. That is, beyond looking to the prior art to determine if it suggests doing what the inventor has done, one must also consider if the prior art provides the required expectation of succeeding in that endeavor. See In re Dow Chem Co. v. American Cyanamid, 837 F.2d at 473, 5 USPQ2d at 1531 ("both the suggestion and the expectation of success must be founded in the prior art, not in Applicants disclosure"). (Emphasis added.) In this case, however, *Jachmann* provides neither a suggestion nor an expectation of success in doing what the inventors have done (i.e., conducting a hydrosilylation reaction in the presence of a heterogeneous catalytic composition to reduce reactions that can form a gum and/or resin during devolatilization). Specifically, from the disclosure of *Jachmann*, one would not have expected to obtain the claimed processes wherein the use of a heterogeneous catalytic composition reduces reactions that can form a gum and/or resin during devolatilization.

Finally, the Official Action asserts that "Applicants have not shown unexpected results over the prior art." See Official Action at page 4. Applicants submit that the attached Declarations of Dr. Stefan Breunig and Dr. Gérard Mignani support the assertion of unexpected results.

The Federal Circuit has stated that evidence arising out of the so-called secondary considerations must always, when present, be considered on route to a determination of

obviousness. Indeed, evidence of secondary considerations can often be the most probative and cogent evidence in the record. It can often establish that an invention appearing to have been obvious in light of the prior art was not. See Stratoflex Inc. v. Auroquip Corp., 218 USPQ 871, 879 (Fed. Cir. 1983); Joy Technologies v. Quigg, 14 USPQ2d 1432, 1444 (DDC 1990).

In particular, as stated by Dr. Breunig and Dr. Mignani in the attached Declarations, because the reactions of *Jachmann*, *Koshar* in view of *Chandra*, and *Koshar* in view of *Jachmann* do not include devolatilizing a silicone oil obtained from a hydrosilylation reaction, which is conducted in the presence of a heterogeneous catalytic composition to reduce reactions that can form a gum and/or resin during devolatilization, these processes would not realize the surprising/unexpected advantages of the processes of claims 46, 47 and 48. That is, because the heterogeneous catalytic composition makes it possible to reduce isomerization reactions during devolatilization and because neither *Jachmann* nor the asserted combinations of other references disclose or suggest using a heterogeneous catalytic composition in a hydrosilylation reaction to reduce reactions that can form a gum and/or resin during devolatilization and then devolatilizing a silicone oil obtained from the hydrosilylation reaction, to achieve the surprising and/or unexpected advantages of the claimed processes, Applicants submit that the claimed processes would not have been obvious over these references.

Thus, even if the Official Action had established a *prima facie* showing of obviousness, Applicants submit that the unexpected results achieved by the claimed

processes would rebut such a showing. Accordingly, the rejection under 35 U.S.C. §103(a) should be withdrawn.

For at least the above reasons, claims 46, 47 and 48 are patentable over *Jachmann*. As the remaining claims all depend, directly or indirectly, from these independent claims, the remaining claims are also patentable over *Jachmann* for at least the reasons that claims 46, 47 and 48 are patentable thereover. Applicants respectfully request reconsideration and withdrawal of the §102(b) and §103(a) rejections over *Jachmann*.

Claims 22, 24, 25, 27-32, 34, 36-41, 44 and 46-48 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Koshar* (U.S. Patent No. 4,313,988) in view of *Chandra* (U.S. Patent No. 4,064,154) or *Jachmann*. For at least the reasons that follow, withdrawal of the rejection is in order.

As explained above, a *prima facie* case of obviousness cannot be established unless the prior art references (or references when combined) teach or suggest all of the claim elements. See *In re Royka*. In addition, "all words in a claim must be considered in judging patentability of that claim against the prior art." See *In re Wilson*. See M.P.E.P. § 2143.03.

Koshar relates to cured epoxypolysiloxanes and their blends with epoxy-terminated silanes which are useful as release coatings for adhesive roll and sheet materials. (See *Koshar* at column 1, lines 10-13.) *Koshar* does not disclose or fairly suggest each element of claims 46-48. That is, as explained above, claims 46-48, as amended, recite conducting a hydrosilylation reaction in the presence of a heterogeneous catalytic composition to reduce reactions that can form a gum and/or resin during devolatilization and devolatilizing

a silicone oil obtained from the hydrosilylation reaction. *Koshar*, however, is completely silent about this problem and only discloses using standard, non-heterogeneous, catalysts. Thus, *Koshar* fails to disclose or suggest all of the elements of claims 46-48.

Chandra also fails to address the problem of undesired by-product production during devolatilization. That is, *Chandra* states that the disclosed catalyst is "easily removed" from reaction residues by decantation or filtration. (See *Chandra* at column 4, lines 65-58.) Applicants submit that reaction residues are normally considered to be waste. Thus, Applicants submit that *Chandra* is directed to recovering an expensive chemical (i.e., the catalyst) from waste generated by a hydrosilylation reaction. *Chandra* does not disclose a process that includes devolatilizing a silicone oil obtained from a hydrosilylation reaction. In addition, *Chandra* fails to disclose or suggest using the disclosed catalyst to reduce reactions that could form a gum and/or resin during devolatilization. Thus, *Chandra*, by itself or in combination with *Koshar*, also fails to teach or suggest all of the elements of claims 46-48.

Moreover, as explained in the previous response, even if one were to assert that minimized by-product production would have been inherent in the asserted combination, this would not be a basis for a proper obviousness rejection. That is, the inherency of an advantage and its obviousness are entirely different questions. That which may be inherent is not necessarily known. Obviousness cannot be predicated on what is unknown. See In re Shetty, 195 USPQ 753, 756-757 (CCPA 1977). In particular, "inherency is quite immaterial if . . . one of ordinary skill in the art would not appreciate or recognize the inherent result." See In re Rijckaert, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993). Clearly,

neither *Koshar* nor *Chandra*, alone or in combination, appreciate or recognize that a heterogeneous catalyst could be used to reduce the formation of undesired by-products during devolatilization of a silicone oil obtained from a hydrosilylation reaction, as recited in independent claims 46-48.

Finally, as explained above, *Jachmann* also fails to teach or suggest all of the elements of claims 46-48. That is, *Jachmann* does not disclose or suggest a process which comprises conducting a hydrosilylation reaction in the presence of heterogeneous catalytic composition to reduce reactions that can form a gum and/or resin during devolatilization or devolatilizing a resulting silicone oil, as defined in claims 46-48. Thus, *Jachmann* alone or in combination with *Koshar*, also fails to teach or suggest all of the elements of claims 46-48.

Furthermore, the combinations of asserted references do not reflect a proper consideration of "all words" in the claims. In particular, because none of the cited references, alone or in combination, disclose or suggest a process that includes using a heterogeneous catalyst to reduce reactions that can form a gum and/or resin during devolatilization or devolatilizing a resulting silicone oil, Applicants submit that the asserted combinations of references do not give full consideration to all claim limitations, i.e., patentable weight must be given to "reduce reactions that can form a gum and/or resin during devolatilization" and "devolatilizing a silicone oil obtained from the hydrosilylation reaction" in claims 46-48 in judging the patentability of these claims over the asserted combinations of references.

In addition, Applicants submit that the asserted combinations of references fail to consider the invention as a whole. That is, because the asserted combinations of references fail to even consider the problem of reducing reactions that can form a gum and/or resin during devolatilization, the claimed processes would not have been obvious over the asserted combinations of references.

In particular, while the claimed processes can produce surprisingly and unexpectedly superior silicone oils having a stable viscosity, non-toxicity, near zero color and non-turbidity, none of the references, alone or in combination, even suggest a process that includes the use of a heterogeneous catalytic composition and a devolatilization step, as claimed.

Because the asserted combinations are entirely unrelated to reducing reactions that can form a gum and/or resin during devolatilization and because none of the references even discloses a process that includes devolatilizing a silicone oil, Applicants respectfully submit that the claimed processes would not have been obvious over the asserted combinations of references.

The Official Action also fails to establish that the prior art provides a reasonable expectation of success. In particular, M.P.E.P. § 2143 requires that a reasonable expectation of success be shown to establish a *prima facie* case of obviousness. Specifically, beyond looking to the prior art to determine if it suggests doing what the inventor has done, one must also consider if the art provides the required expectation of succeeding in that endeavor. See In re Dow Chem Co. ("both the suggestion and the expectation of success must be founded in the prior art, not in applicants disclosure").

(Emphasis added.) In this case, however, the asserted combinations of references provide neither a suggestion nor an expectation of success in doing what the inventors have done (i.e., reducing reactions that can form a gum and/or resin during devolatilization through the use of a heterogeneous catalyst). Specifically, one would not have expected to obtain the claimed processes by combining the references in the manner asserted in the Official Action.

Furthermore, Applicants submit that the attached Declarations provide evidence of unexpected/surprising results that must be considered in determining the non-obviousness of the claimed processes. In particular, as explained above, and as stated in the attached Declarations of Dr. Breunig and Dr. Mignani, because the asserted combinations fail to disclose or suggest modifying the disclosed processes to include use of a heterogeneous catalytic composition in a hydrosilylation reaction to reduce reactions that can form a gum and/or resin during devolatilization and then devolatilizing a silicone oil obtained from the hydrosilylation reaction, to achieve the surprising and/or unexpected advantages of the claimed processes, Applicants submit that the claimed processes would not have been obvious over these references.

Thus, even if the Official Action had established a *prima facie* showing of obviousness, Applicants submit that the unexpected results achieved by the claimed composition would rebut such a showing. Accordingly, the rejection under 35 U.S.C. §103(a) should be withdrawn.

For at least the above reasons, claims 46, 47 and 48 are patentable over the combination of *Koshar* in view of *Chandra* or *Jachmann*. As the remaining claims depend,

directly or indirectly, from these independent claims, the remaining claims are also patentable over the above combinations of references for at least the reasons that the independent claims are patentable thereover.

From the foregoing, Applicants earnestly solicit further and favorable action in the form of a Notice of Allowance.

If there are any questions concerning this paper or the application in general, Applicants invite the Examiner to telephone the undersigned at the Examiner's earliest convenience.

Respectfully submitted,

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Attachments: Declaration of Dr. Breunig
Declaration of Dr. Mignani